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JUNE 4.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-four persons present.

The death of Wm. M. Gabb was announced.

The Law Governing Sex.—Mr. THOMAS MEEHAN referred to his observations originally reported to the Academy, developing an entirely new view of the laws of sex from that formerly prevailing, and which proved that what we called the female sex or final reproductive element in flowers, required a higher grade of nutritive power to perfect than the male. Though numberless facts have proved this point, there have always been some which, though they have offered no obstacle, have at least not been capable of explanation by the light of this theory, and among these have been some connected with diœcious plants. Among hermaphrodite and especially among monœcious plants there has been no difficulty in tracing the operation of this principle. In such coniferous trees as pines, firs, and larches, there is no difficulty in perceiving that branches once bearing female flowers, and maturing cones and seeds, produce nothing but male flowers when the branches come in time to be weakened by the shade of younger branches, or in some other way are imperfectly nourished. But when we come to the red cedar, *Juniperus Virginiana*, where some trees are always wholly male, and others always seed bearing, no difference could be found in the vigor of the trees. As in the monœcious cases we found the female element in exact proportion to nutritious advantages, we looked for the seed-bearing trees of the red cedar to be more vigorous than the males, but found instead all equally vigorous and healthy.

The enormous crops of seed borne by the silver maple this year, together with the confirmation of their truly diœcious character, have not only furnished an explanation of the apparent anomaly, but at the same time affords one of the best possible illustrations of the new theory.

As already noted in communications to the Academy, the flowers in *Acer rubrum* and *Acer dasycarpum* are alike in all trees when the petals first open. The anthers seem perfectly formed when another stage of growth commences. The pistils elongate in the female flowers while the filaments remain stationary, and the anthers never open; while in the male flowers the pistils do not grow, but the filaments elongate, and the anthers are carried on to perfection. Each tree is in fact strictly a male or a female tree.

It is a matter within common knowledge that after the maturity of the immense crop of seeds last month, the bearing trees were

comparatively leafless; while the completely barren male trees abounded with foliage. There is a well-known morphological law, that the parts of flowers and the resulting seed vessels are metamorphosed leaves. In the case of these maples, the female trees, engaged in developing primordial leaves to perfect fruit, make few leaves in addition to those they started with in the spring, until, after several weeks, their fruitage has been completed. But the male flowers, dying immediately on perfecting their pollen, the male trees push at once into a heavy leaf growth, clothing the tree at a very early period with a dense foliage.

But another consideration intrudes itself here. The woody parts of a tree are made up mainly from the atmosphere through the medium of the leaves, and we may suppose that the greater the proportionate amount of leaves, the greater would be the woody product. Applying now these acknowledged principles to these maple trees, we find some remarkable results. Notwithstanding the male trees are relieved from the enormous strain on the powers of nutrition which the annual and often wonderfully heavy crops must entail, and notwithstanding they have, as in many cases this season especially, the advantage of a hundredfold more foliage at so early a period in the season, male trees are no larger, vigorous, or in any way more healthy than the female ones. In a crowded group of five trees where a female tree is the central one, and a male on the outside, the male with every advantage of food for the roots, and light and air for its large crop of leaves, and which happens to be an unusually large mass of foliage even for a male maple, the girth of the trunk is four feet three inches, while the crowded female tree is five feet five inches, or two inches larger, with all its disadvantages!

We have been looking for weaker individuals in the male than in the female trees. But since he had first made his discoveries we have learned to distinguish much more clearly between vegetative and reproductive force. A large man is not necessarily a strong man in what we should call vital power; but we measure it by endurance under severe trials, and we see now that we need not have looked for weaker trees among the cedars or other diœcious trees, so much as for powers of endurance under reproductive or other essentially vital strains. Here we have this power thrown heavily in favor of the female tree; and he submitted that diœcism in trees instead of being an objection, is a powerful argument in favor of his views.

The President, Dr. Ruschenberger, inquired if Mr. Meehan had ever noticed any difference in the longevity of the male and female trees.

Mr. Meehan replied that he had so far seen no difference.

On a Singular Tartar on the Teeth of a Sheep.—Mr. E. GOLD-SMITH called attention to a deposit upon the teeth in the lower jaw of a sheep. The specimen had been exhibited at a previous meet-